RG104 E-1 Box 141 Jul-Sep 1886

Mint of the United States at Philadelphia,
MELTING AND REFINING DEPARTMENT,

Philadelphia, 29th September, 1886.

Sir,

I have endeavored to determine the relative qualities and values of the Anthracites, which we employ in melting Gold and Silver, by observing their behavior in the fire, and having them assayed for the percentage of ash left by their combustion.

One ton of Newton's, hand picked, holds its heat best of all; is the cleanest kind we have used; gives 5½ pr. ct. ash; — the ash has so little iron in it, that it does not clinker; — hence requires little raking, say twice during the day, and loses no heat in clinkering.

Stockham's last Coal is fair to good; does not seem to hold its heat as well as the former, requires more raking to obtain the fullest heat, and the 6½ pr. ct. ash, which it yielded, clinkers

through the oxide of iron it holds, and so diminishes heat to that extent, in spite of more frequent raking. The ton used was selected, because when taken from the ordinary daily supply, previous to these trials, it assayed 18½ pr. ct. ash, but when selected gave only 6½ % ash. For the former coal we paid $4 89/100 per ton. When this ton with its 18½ pr. ct. ash is reduced a ton of, say 6% ash, we actually paid $5 66/100 per ton of such coal. This coal is rather softer than Newton's, & therefore, to that extent, inferior.

It is hardly worth giving an opinion on the sample of Lehigh coal we tried, because, as it spalls when thrown on a hot fire, as it must be in melting, it throws off such a multitude of spalls as to choke the draft of the furnace, and impede its melting power, injuriously.

I may mention that Dr A. Muckle has taken much interest in the question of quality

of fuel, as influencing cost to the Government, and the endurance of men engaged in melting.

The assays for ash were executed by Mr. J. R. Eckfeldt, the Assayer, for this investigation.

The conclusions to which I have been led by the above investigations, and many like ones, formerly made, are 1. that the greatest economy is secured by using the hardest anthracite, that has little ash, and will not spall on a hot fire, and whose ash is reasonably free from oxide of iron, so as to avoid clinkering. 2. That for our use it is economically best to have every ton hand-picked. 3. That it is of the highest importance to examine the supplies of coal frequently, and when they fail to come up to a fixed practical average, there should be a deduction in the price of the coal, in some proportion, deduced from observation, with 10 % further deduction for loss in the use of such coal

Very Respectfully
Jas C Booth

Hon. D. M. Fox
Superintendent.

NARA RG104, Entry 1, Box 141

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Melting and Refining Department,
Philadelphia,
September 29, 1886

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Jas. C. Booth

Hon. D.M. Fox, Superintendent.